

## ABSTRACT

Manual material handling has a high risk of injury such as low back pain. PT. ABO FARM is a company engaged in the field of agriculture, particularly in the export of beans. One of the export process is the process of transporting beans from the workstations collector to the warehouse in PT. ABO FARM. Observation results showed that the removal of material in the process of loading is taking, carrying and putting sacks of beans into a pick-up truck on a workstation collection is done manually and not ergonomic. Material is removed in the form of sacks of beans with an average weight of 55 kg.

This research aims to design a method for manual material handling in the loading process become more ergonomic. The approaches taken in this research are a biomechanical approach and a lifting equations recommended by NIOSH agencies working in the facility design. The design method of manual material handling is done by making suggestions for grip position on the proposed container and perform testing of several alternative methods of manual material handling with parameters generated compressive force on L5/S1.

The results of tests on several alternative methods of generating manual material handling is more ergonomic. It is shown by the reduced L5/S1 compressive force against each activity in the process of loading are taking activity decreased about 98% from 12168 N becomes 276.2 N. In carrying activity, compressive force decreased about 97% from 9213 N becomes 275.2 N. And for putting activity decreased about 96% from 7109 N becomes 280 N.

**Keywords:** biomechanics, loading, low back pain, L5/S1 compressive force, manual material handling.